

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
NEEDLES RESOURCE AREA**

ENVIRONMENTAL ASSESSMENT

EXECUTIVE SUMMARY

Purpose and Need

The Bureau of Land Management (BLM) and the Department of Interior (DOI) are considering a request by the State of California to transfer 1000 acres of federally owned land at Ward Valley for siting a proposed Low-Level Radioactive Waste (LLRW) disposal facility. BLM is preparing a Supplemental Environmental Impact Statement (SEIS) on the proposed land transfer. The SEIS will address a range of issues on which significant new information has become available since the initial environmental impact statement was issued in 1991, including radioactive movement in the soil at the Ward Valley site. Specifically, the SEIS will include the results of tritium and related materials testing, as recommended by a National Academy of Sciences (NAS) panel in 1995. Findings of tritium were reported at considerable depth (30 meters) below the surface at the Ward Valley site. The NAS panel was unable to determine the cause of the findings, and it recommended further sampling and analysis for tritium and chlorine-36 at the site. The testing is expected to investigate the extent to which tritium released into the atmosphere during the 1950's and 1960's has migrated into the soil at the Ward Valley site.

DOI/BLM has proposed to conduct tritium and related materials testing, based on protocols prepared by two consultants who served on the NAS panel. The Protocols are available on request. (Comments on the draft protocols should be submitted to BLM separately from comments on the EA.) The State of California has proposed to conduct a tritium and related materials study, designated a rainfall infiltration study. The State declined to provide a copy of its testing protocols. The results of the Federal Government testing efforts will be incorporated in the draft SEIS. If available, the results of the State of California's testing will also be incorporated in the draft SEIS.

Alternatives including the Proposed Actions

The DOI proposal consists of: 1) five 150 feet deep boreholes for core samples, to be finished with gas sampling tubes, 2) two approximately 700 feet deep boreholes for core samples, to be finished for gas sampling and ground-water monitoring, and 3) one area of trenching not to exceed 65 feet in total length, 5 feet in width, and 6 feet in

depth, to establish near surface samples in a wash and interfluvial area. The trenched area would be restored to original morphology shortly after soil samples have been established. The 7 borehole installations would be retained for future monitoring and sampling.

Borings would be developed through a combination of hollow stem auger and ODEX (specialized drilling equipment for deep borings) drilling techniques. This alternative is based on draft Sampling Protocols developed by BLM's consultants. Additional information describing the DOI/BLM testing is included in the draft protocols which are available on request. Samples taken from the site would be submitted for laboratory analysis, and the results made public and included in the SEIS.

Impacts of DOI/BLM Proposed Testing: Most of the proposed activity would occur within existing disturbed areas the 1000 acre site, and would have a negligible adverse affect. A total of one-half acre would be affected including previously disturbed areas. A minor amount of existing vegetation would be disturbed,. Slight impacts would result from air emissions, noise, and dust from drilling activities and vehicle use generally during daylight hours over an approximately 8 week period. Impacts to wildlife would be minimal and temporary. Potential impacts to the desert tortoise and its critical habitat are minor and are within the scope of the Fish and Wildlife Service biological opinion #1-8-97-F-17, which covers small projects in the California Desert. The testing would not affect any known archaeological resources. Native Americans have said the testing could conflict with traditional and religious use by Native Americans.

State DHS proposal consists of eight vertical borings ranging from approximately 100 to 600 feet deep. Two shallow boreholes (less than 10 feet deep) would be drilled adjacent to three of the eight deep geologic borings for soil core extraction. Borings would be developed using a combination of hollow stem auger and ODEX drilling techniques. Core samples would be obtained continuously at shallow depths and deeper at prescribed intervals. With two exceptions, drill holes would be refilled and ground surface returned to its original status after samples are obtained. Two of the geologic borings would be finished with air piezometers at various depths for the purpose of obtaining soil gas samples. If the facility is constructed, these borings would become part of the long-term site monitoring program.

Impacts of State DHS Proposed Testing: Approximately one acre would be disturbed as a result of the construction of eight drill pads and access route construction or improvement. Proposed drill sites and a portion of the access routes are outside existing cleared areas. Vegetation is proposed to be "flush cut" (cut off at ground level). This would disturb wildlife habitat, increase erosion potential and dust, reduce visual quality, and damage vegetation over the six week proposed drilling period. Shrubs such as creosote and white bursage would not be expected to resprout after cutting and would likely be replaced by non-native species. Emissions, dust, and noise

from drilling equipment and vehicles would be intensified as a result of around-the-clock drilling with multiple crews and drill rigs. The potential for accidents also is increased by having double shifts working continuously night and day. Night lighting of the drilling operation would be clearly noticeable from Interstate 40. Potential impacts to the desert tortoise and its critical habitat are minor and within the scope of the FWS biological opinion #1-8-97-F-17. Testing would not affect any known archaeological resources but Native American have said the testing could conflict with traditional and religious use.

Separate DOI/BLM and State DHS testing consists of separate testing programs at the site consistent with each proposed action. Personnel, bore holes, vehicles and equipment, mileage driven, and other components of the drilling would be duplicated.

Impacts of Separate DOI/BLM and State DHS testing: Approximately 1.5 acres would be disturbed. With sequential drilling, impacts would occur over a period of 14 weeks, but no additional cumulative effects would result. If operations were to occur simultaneously, the level of activity on the site would be doubled, the likelihood of accidents and additional environmental damage increased, and difficulty for BLM to manage the site significantly magnified. Simultaneous drilling would be completed within 8 weeks.

No-Action Alternative consists of continuing existing use with no testing by either DOI/BLM or the State DHS. No test results would be available for the SEIS.

Impacts of No Action: If no drilling is undertaken, the area would continue to be subject to use by US Ecology for monitoring purposes and the Metropolitan Water District of Southern California (MWD) for maintenance of the MWD powerline, consistent with existing right-of-way grants, as well as permitted protest activities. Minor impacts would continue to occur to soils, vegetation, and wildlife.

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
NEEDLES RESOURCE AREA**

ENVIRONMENTAL ASSESSMENT

1. CONTROL NUMBER:

CA-069-EA7-42

2. CASE FILE / SERIAL NUMBER:

CACA 38705 (DHS); CACA 38815 (DOI)

3. PROPONENTS:

The Department of Interior and the California Department of Health Services

4. PROJECT:

Ward Valley Tritium and Related Materials Testing

5. LOCATION:

Township 9N, Range 19E, Section 34, San Bernardino Baseline and Meridian

6. AFFECTED ACREAGE:

Less than two acres

7. 7.5' QUADRANGLE:

West of Flattop Mountain

8. MULTIPLE-USE CLASS:

Moderate Use

9. LAW ENFORCEMENT SECTOR:

92

10. LAND STATUS:

Public lands

11. SPECIAL DESIGNATION AREA:

California Desert Conservation Area, Energy Production and Utility Corridor E, Desert Tortoise Critical Habitat

12. AUTHORITY:

43 United States Code (U.S.C.) 1732, 1733 and 1740

13. LAND USE PLAN CONFORMANCE:

13.1 California Desert Conservation Area Plan

The proposed actions are in conformance with the California Desert Conservation Area Plan.

The Ward Valley site, included within the California Desert Conservation Area (CDCA), is managed by the Bureau of Land Management (BLM) under the provisions of the CDCA Plan (BLM, 1980). The candidate site is designated as Multiple-Use Class M. The Plan provides the following guideline for this classification:

Multiple-Use Class M (Moderate Use) is based upon a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause.

The CDCA Plan class designations govern the type and degree of land use actions allowed within the areas defined by class boundaries. All land use actions and resource management activities on public lands within a multiple-use class delineation must meet the guidelines set forth for each class in the Plan. In addition, 12 CDCA Plan elements provide more specific application of the multiple-use class guidelines for a specific resource or activity.

Several of the Plan elements are relevant to the site, including those for Wildlife, Energy Production and Utility Corridors, Livestock Grazing, Geology-Energy-Minerals, and Motorized-Vehicle Access. The CDCA Plan element for wildlife designates the site area as Planned Management Area for Fish and Wildlife (No. W-35, Fenner/Chemehuevi Valleys) for the Desert Tortoise Crucial Habitat. The site lies within a designated utility corridor, a three-mile wide linear strip set aside under the CDCA Plan. The area also is within the ephemeral/perennial Lazy Daisy cattle grazing allotment. Ephemeral range types usually occur in regions below elevations of

3,500 feet where annual forbs and grasses are major forage. Ephemeral forage production can vary extremely from year to year, requiring management flexibility in prescribing stocking rates and seasons of use.

13.2 San Bernardino County General Plan

The proposed actions are consistent with the San Bernardino County General Plan.

The San Bernardino County General Plan designates the site area as Rural Conservation. This land use category includes a wide variety of publicly and privately owned land which by its location, access limitations, natural resources or scenic qualities, lends itself to uses of very low intensity and limited human habitation. This land use category is distinguished by the absence of any of the public services and improvements associated with urban areas.

14.0 PURPOSE AND NEED FOR THE PROPOSED ACTIONS:

The Bureau of Land Management (BLM) and the Department of Interior (DOI) are considering a request by the State of California to transfer 1000 acres of federally owned land at Ward Valley for siting a proposed Low-Level Radioactive Waste (LLRW) disposal facility. BLM is preparing a Supplemental Environmental Impact Statement (SEIS) on the proposed land transfer. The SEIS will address a range of issues on which significant new information has become available since the initial environmental impact statement was issued in 1991, including radioactive movement in the soil at the Ward Valley site. Specifically, the SEIS will include the results of tritium and related materials testing, as recommended by a National Academy of Sciences (NAS) panel in 1995. Findings of tritium were reported at considerable depth (30 meters) below the surface at the Ward Valley site. The NAS panel was unable to determine the cause of the findings, and it recommended further sampling and analysis for tritium and chlorine-36 at the site. The testing is expected to investigate the extent to which tritium released into the atmosphere during the 1950's and 1960's has migrated into the soil at the Ward Valley site.

DOI/BLM has proposed to conduct tritium and related materials testing, based on protocols prepared by two consultants who served on the NAS panel. The Protocols are available on request. (Comments on the draft protocols should be submitted to BLM separately from comments on the EA.) The State of California has proposed to conduct a tritium and related materials study, designated a rainfall infiltration study. The State declined to provide a copy of its testing protocols. The results of the Federal Government testing efforts will be incorporated in the draft SEIS. If available, the results of the State of California's testing will also be incorporated in the draft SEIS.

15.0 PROPOSED ACTIONS AND ALTERNATIVES:

15.1 Proposed Department of the Interior Testing for Tritium and Related Materials

15.1.1 Summary

The DOI proposal consists of: 1) five 150 feet deep boreholes for core samples, to be finished with gas sampling tubes, 2) two approximately 700 feet deep boreholes for core samples, to be finished for gas sampling and ground-water monitoring, and 3) one area of trenching not to exceed 64 feet in total length, 5 feet in width, and 7 feet in depth, to establish near surface samples in a wash and interfluvial area. The trenched area would be restored to original morphology shortly after soil samples have been established. The 7 borehole installations would be retained for future monitoring and sampling. Borings would be developed using a combination of hollow stem auger and ODEX (specialized drilling equipment for deep borings) drilling techniques.

This alternative is based on draft Sampling Protocols developed by BLM's consultants. Additional information describing the overall DOI/BLM sampling program is included in the draft Protocols which are available on request.

The total disturbed area for this alternative would not exceed one-half acre

In the event of borehole abandonment caused by drilling problems, the borehole would be back filled with native material (the cuttings) and the surface restored to the original state in accordance with procedures specified by the California Department of Water Resources (DWR 1981). San Bernardino County Environmental health guidelines would also be followed.

Compacted drill pads and access routes would be scarified where necessary to facilitate revegetation. At the trenching site area, the trench would be backfilled with native material, spoil-pile areas restored to original morphology, and excess spoil removed to expose preexisting desert soil structures where appropriate. Crushed perennial vegetation would be left undisturbed for regeneration. At the two wash located borehole sites, the boreholes would be protected from future natural wash flows by a cemented conductor casing rising to 2 feet above the natural channel berm levels to protect the nested gas sampling access tubes located inside the casing, and capped with a water proof removable cap or plug. The channel morphology would be restored to natural grade if affected during drilling.

15.1.2 Locations

The specific site areas for the proposed boreholes are the attached map. All drill sites are served by existing access roads and drilling pads.

15.1.3 Surface Use

The proposed actions would require surface use at 8 sites, 7 sites for borehole installations, and one site a temporary trench sampling area. Surface uses during the installations due to vehicular access and construction/sampling activities would primarily be in existing areas of surface disturbance. No new access routes are proposed. There would be three installations that may impact vegetation and surface soils, 2 boreholes at ephemeral-wash sites adjacent to existing drill pads with existing access, and one trenched area that extends from a wash setting to an interfluvial setting that would be restored to original morphology after soil samples are established. The three installations with potential for surface disturbances have been selected to minimize vegetation disturbance by using sparsely vegetated wash and desert pavement settings for vehicular activities immediately beyond the adjacent access roads and drill pads. A combined total of less than one-half acre of impacted vegetation (crushing) and soil disturbances (surface compaction and spoil pile-impacts) would occur.

Operations at the drilling sites would consist of the truck mounted drilling rig located on the borehole site, and a drilling support truck also adjacent to the borehole site, generally backed to the borehole opposite to the drilling rig. No other vehicular access is required at the borehole head, and other support vehicles would be positioned according to existing disturbed areas (drilling pads and access roads) to avoid damage to vegetation and soils.

Five of the seven boreholes (2x700' deep, 3x150' deep) would be constructed on existing drilling pads with road access and no undisturbed ground would be impacted.

15.1.4 Project Duration

Drilling activities and vehicular traffic along access roads is anticipated to occur over an 8 week period. As the boreholes would be completed for periodic resampling and/or monitoring purposes, occasional borehole site visits by vehicles might occur until there is a final determination on the proposed LLRW facility at the site. The boreholes would be located and designed to become part of the permanent monitoring network at a LLRW facility, or become part of a on going monitoring and research program, if the site is transferred and the facility constructed.

Drilling is proposed to be undertaken in single shifts, generally during the daylight hours. Not more than 2 drill rigs would be used at the same time. Temporary delays may result from inclement weather and when the soil is too wet.

Only minor continued use areas would occur after the drilling is completed, with visual impact related to two instrument shelters associated with the two deep monitoring wells. These are both located where existing instrument structures are

present.

15.1.5 Access

All site areas have preexisting access roads. Three specific sites are beyond pre-established drill pads or access roads but within contiguous areas of sparse vegetation caused by desert pavement and wash channeling.

15.1.6 Vehicles

Site activity would require the following vehicles near and/or onsite during the construction, sampling and completion periods.

Borehole Sites

Drilling Rig (1)
Drilling support truck (1)
Drilling personnel support vehicle (1)
Technical support personnel vehicle (1)
Geophysical truck (1) (one visit per borehole site)

Trench Site Area

Transporting truck and trailer for Backhoe (1)
Backhoe (1)
Technical support personnel vehicle (1)

Staging Area

Office (RV trailer) (1)
Core storage structure (1)
Core transporting truck (1)
Security vehicle (1)
Sanitation Service vehicle (1)

At any given period, the majority of support vehicular activity would be between an active specific site area, and the staging area. The heavy equipment (drilling rig and support truck, backhoe truck and trailer, backhoe) would remain at each specific site area until completion of activities over a period of several working days. Personnel support vehicles, core transporting vehicle, Geophysical truck, and the security vehicle would make trips between the activity sites and the staging area as activities demanded.

15.1.7 Personnel

Personnel on site at varied times would be as follows:

Drilling Contractor

Driller (1)
Driller's helpers (2)
Backhoe truck/backhoe driver (1)

Technical Support

Field Program Manager (Hydrogeologist) (1)
Field technician (2)
Soil Physicist (1)
Core Manager (1)
Biologist (1)
Geophysical technicians (2)

Other Support Personnel

Security guard (1)
Sanitation servicemen (1)

For the majority of the field activity period, 5 personnel would be actively working at the drill site. The remaining personnel would be at the staging area or off site.

15.1.8 Safety Plan

A written safety plan and associated training would be established and distributed to participating personnel. The California Occupational Safety and Health Administration (CAL OSHA) safety equipment and regulations would be included, and would be enforced during operations. Part of the safety plan would include emergency procedures and procedures for emergency services available in Needles, California.

Communications for emergencies and operations would be by radio and/or cellular telephones.

15.1.9 Resource Protection

Before any surface-disturbing activities begin, a site visit would take place to ensure the protection of resources on the site. This team would include a US Fish and Wildlife Service (FWS) approved biologist to mark the location of tortoise burrows and identify ingress/egress routes that minimize potential disturbances.

15.1.10 Desert Tortoise

Several measures would be undertaken for the testing to insure that no desert tortoises would be harmed. Habitat disturbances would also be minimized.

The FWS approved biologist would inspect each investigation site and access route prior to surface-disturbing activities to insure that no usable tortoise burrows, no high-use areas of any tortoise's home range (most, if not all of which have been delineated in the eight-year, ongoing study of tortoises at the site), and no special resources, such as uncommon, but useful, forage species (e.g., galleta grass) would be destroyed. The disturbance planned on each site would also be minimized. The biologist would provide guidance to investigators for all testing activities.

After the locations of borehole sites, monitoring equipment installations, and access routes would be chosen and staked by the reconnaissance team, the biologist would completely survey the areas to be disturbed and provide guidance to investigators regarding ingress and egress and limitations regarding tortoise and habitat interaction.

The boundaries of each testing site and access route would be flagged. All nearby tortoise burrows would be flagged.

Each test site would be fenced with temporary fencing to exclude tortoises. The bottom of the fence would be flush with the soil surface, but not buried to minimize disturbance to the habitat.

The FWS approved biologist or a person trained by the biologist would be on site during all tortoise-activity periods to monitor investigation activities. The FWS approved biologist would determine whether a monitor is required during certain times when tortoises would not be expected to be active (e.g., during the day when ground temperatures exceed 42 degrees C, and during the night). Factors for such determination would include ambient temperatures, relative humidity, and storm conditions. A monitor would be available at all times, should it be determined to be necessary.

All workers on the drilling and investigation crews would be educated relative to tortoise life history, site-specific behaviors, endangerment factors, legal requirements, and site-specific rules.

No surface disturbances would be conducted outside flagged areas.

Ingress and egress along access routes would be accompanied by a tortoise monitor.

Measures set forth by the U.S. Fish and Wildlife Service as terms and conditions (e.g., trash, predators, speed limits) would be implemented.

15.1.11 Sanitation

Sanitation facilities would be established at the staging areas) and at the activity area during the activity period at each site. Solid waste from operations would be contained and disposed of in an offsite landfill facility.

15.2 Proposed California Department of Health Services Testing

15.2.1 Summary

DHS is applying to obtain a minimal use permit from BLM authorizing the State's proposed testing. Because the State has not provided protocols for the testing as requested by BLM, this environmental assessment can only address the information specifically provided in the State's application.

DHS and its contractors propose to develop eight vertical borings from approximately 100 to 600 feet deep. Two shallow boreholes (less than 10 feet deep) each would be drilled adjacent to three of the eight deep geologic borings for soil core extraction. Borings would be developed using a combination of hollow stem auger and ODEX (specialized drilling equipment for deep borings) drilling techniques. Core samples would be obtained continuously at shallow depths and deeper at prescribed intervals. With two exceptions, drill holes would be refilled and ground surface returned to its original status after samples are obtained. Two of the geologic borings would be finished with air piezometers at various depths for the purpose of obtaining soil gas samples. If the facility is constructed, these borings would become part of the long-term site monitoring program.

A hollow-stem auger rig, a pickup truck, and a small flat-bed trailer would be mobilized to the site to drill eight geotechnical borings. A hollow-stem rig would be used to construct the geotechnical borings to a depth of approximately 200 feet. A two-person crew would accompany the rig, and a geologist would supervise the drilling operations and obtain samples from each hole.

For depths below 200 feet, a specialized air-rotary drilling method (ODEX) would be employed. The area of surface disturbance would be the same as for the hollow-stem auger drilling. Soil samples obtained during drilling would be analyzed to determine the physical characteristics of the alluvium underlying the site. Two of the geotechnical borings would be developed for air piezometer installation.

Total surface disturbance from drill pad construction and access route development or improvement would amount to approximately one acre.

Each drilling crew and geologist would generally make one round trip to the site per day. All geotechnical borings would be drilled and properly abandoned. Vehicles would be restricted to designated access routes.

The two geotechnical borings developed with air piezometers would be maintained for subsequent monitoring, if the facility is constructed. Locations would be clearly marked. Monitoring facilities would include concrete pads, approximately 18 inches square and no more than 6 inches above ground surface.

The remaining geotechnical borings would be abandoned immediately after they have been drilled to total depth. Abandonment of the test borings would be done according to procedures specified by the California Department of Water Resources (DWR, 1981). San Bernardino County Environmental Health Services guidelines would also be followed.

Abandonment of the geotechnical borings would be performed by initially clearing each borehole of any obstructions. The boreholes would then be filled from the bottom of the borehole to within several inches of the ground surface with a native material taken from cutting material. A thin cover of native soil would be placed over the borehole to ground surface level.

All brush and scrubs cut to provide access would be promptly removed for off-site disposal.

Areas where vegetation loss and soil compaction have occurred would be prepared for seeding using protocols used successfully in previous Revegetation programs in the Mojave Desert. On-site consultation with a BLM representative before revegetation begins would establish the appropriate depth of scarifying and any additional measures that may be required.

Where disturbance consists of soil compaction and vegetation damage resulting from moderate pedestrian traffic only, further soil disruption through scarification and the introduction of new vegetation is not likely to be warranted. Natural growth of vegetation in the affected areas would minimize total disturbance.

Demobilization and restoration would take approximately one week following the completion of field sampling.

15.2.2 Locations

Surface-disturbing activities would be limited to eight distinct areas as shown on the attached map. All are well within Section 34 and adjacent to the proposed LLRW disposal area.

15.2.3 Surface Use

Ground disturbance would be minimized by locating boreholes no more than 100 feet from existing disturbed areas. Flora (e.g., creosote, burrowbush) would be flush-cut

along a 15-foot wide access road. Drilling pads and support areas would be no more than 2,500 square feet per site. Tortoises and burrows would be identified and monitored by qualified, trained tortoise handlers during the entire operation.

A hollow stem auger rig, or ODEX rig as appropriate, pickup truck and a flat bed trailer would be used at each drilling location. Both rigs would operate simultaneously during the middle portion of the investigation period. Each rig would have a two-person crew and supervising geologist. There would also be a study supervisor, a health and safety officer, and support personnel on site. CDHS would have a representative on site at least 50% of the time during operations. An authorized tortoise biologist or trained representative would be on site 100% of the time during daylight operations.

US Ecology personnel would provide logistical support, thereby minimizing additional personnel needs.

The logistical center for the project would be in the large, generally unvegetated area south of the proposed LLRW site near the existing US Ecology monitoring wells, MW1 and MW2. It would include a recreational vehicle (RV) which would serve as a rest area for work crews and an administrative control center. Comfort stations ("porta-potties") would be temporarily located in all manned work areas.

15.2.4 Project Duration

The State's operations are expected to last no more than 45 calendar days. Field operations would be conducted around the clock, so field lighting would be necessary. Dust and noise would be controlled in accordance with mitigation measures set forth in the State's application. The measures are consistent with the project's 1991 Final Environmental Impact Report and county-approved dust control plan.

15.2.5 Access

The State's proposal includes improvements to existing access routes and the construction of new routes. Access routes would extend from existing routes or disturbed areas to coring and test pit sites. Access routes would be flush-cut along non-critical terrain as determined by the FWS approved biologist. There would be eight such routes, each about 15' wide. Lengths would be limited to minimize disturbed areas, but still meet study objectives. Access routes would be watered to control dust.

15.2.6 Vehicles

Borehole Sites
Air Rotary drill rig (1)

Hollow stem Rig (1)
Flatbed truck (1)
Pickup truck (1)
Geophysical truck (1)

Staging Area

Service vehicle (1)
RV (1)

15.2.7 Personnel - Not identified

15.2.8 Safety Plan

During the study, workers would have access to water, food, cellular telephones and first aid in the recreational vehicle to be located in the large cleared area(staging area).

DHS would use radio communication for emergency and non-emergency situations, as needed. Radio communications would be established and constantly maintained between the site and US Ecology's office in Needles.

Radio communications would serve to:

- provide a communications link to a source of aid in the event of serious injury or accident,
- provide a communications link between field personnel and local/regional law enforcement authorities for assistance in the event of security problems,
- enable field personnel to communicate with their home offices for technical information or instruction, and
- enable separate field crews to communicate in the event of an emergency.

A safety plan would be distributed to supervisory personnel prior to initiation of drilling operations. The purpose of the site safety plan is to identify hazards that might pose a threat to the health and safety of the site workers, and to provide training for site workers.

Personal protective equipment as described in the project health and safety plan would be mandatory during drilling operations and monitoring activities. Site operating procedures with respect to mechanical, electrical, chemical, temperature, and biological hazards would be in compliance with regulations of the California Occupational Safety and Health Administration (CAL OSHA).

15.2.9 Resource Protection

Before any surface-disturbing activities begin, a site visit would take place to ensure

the protection of resources on the site. This team would include a FWS approved biologist to mark the location of tortoise burrows and identify ingress/egress routes that minimize potential disturbances.

15.2.10 Desert Tortoise

Several measures would be undertaken for the testing to insure that no desert tortoises would be harmed. Habitat disturbances would also be minimized.

The FWS approved biologist for the proposed LLRW project would inspect each investigation site and access route prior to surface-disturbing activities to insure that no usable tortoise burrows, no high-use areas of any tortoise's home range (most, if not all of which have been delineated in the eight-year, ongoing study of tortoises at the site), and no special resources, such as uncommon, but useful, forage species (e.g., galleta grass) would be destroyed. The disturbance planned on each site would also be minimized. The FWS approved biologist would provide guidance to investigators for all testing activities.

After the locations of borehole sites, monitoring equipment installations, and access routes would be chosen and staked by the reconnaissance team, the biologist would completely survey the areas to be disturbed and provide guidance to investigators regarding ingress and egress and limitations regarding tortoise and habitat interaction.

The boundaries of each testing site and access route would be flagged. All nearby tortoise burrows would be flagged.

Each test site would be fenced with temporary fencing to exclude tortoises. The bottom of the fence would be flush with the soil surface, but not buried to minimize disturbance to the habitat. (Loose topsoil from the excavation or flush-cut brush would be used to lock any gaps under the fence.)

The FWS approved biologist, or a person trained by the biologist would be on site during all tortoise-activity periods to monitor investigation activities. The FWS approved biologist would determine whether a monitor is required during certain times when tortoises would not be expected to be active (e.g., during the day when ground temperatures exceed 42 degrees C, and during the night). Factors for such determination would include ambient temperatures, relative humidity, and storm conditions. A monitor would be available at all times, should it be determined to be necessary.

All workers on the drilling and investigation crews would be educated relative to tortoise life history, site-specific behaviors, endangerment factors, legalities, and site-specific rules.

No surface disturbances would be conducted outside flagged areas.

Ingress and egress along access routes would be accompanied by a tortoise monitor.

Measures set forth by the U.S. Fish and Wildlife Service as terms and conditions included in the biological opinion (e.g., trash, predators, speed limits) would be implemented.

15.2.11 Sanitation

Sanitation facilities would be established at the staging area (if not already in place) and at the activity area during the activity period at each site. Solid waste from operations would be contained and disposed of in an offsite landfill facility.

15.3 Alternatives Analyzed in Detail

15.3.1 No-Action Alternative

Neither the DOI nor the State of California proposals would be undertaken. No test results would be available for the SEIS. Existing management and use of the site would continue subject to applicable statutes, regulations, policy and land use plans. The site would continue to be used by US Ecology for authorized monitoring purposes and by the Metropolitan Water District of Southern California (MWD) for maintenance of the MWD powerline, consistent with existing right-of-way grants, as well as use by permitted protest activities.

15.3.2 Separate DOI and State of California Testing Alternative

DOI and the State would undertake separate testing programs at the site consistent with each proposed action. Personnel, bore holes, vehicles and equipment, mileage driven, and other components of the drilling would be duplicated. The total amount of area disturbed would amount to less than 2 acres. To prevent unnecessary site disturbance and reduce the potential for one drill program interfering with the other, the drilling would occur sequentially, with either DOI or the State drilling first and the other following.

15.4 Alternatives Considered But Not Analyzed In Detail

15.4.1 Joint Testing Option

As a result of the failure of the State and DOI to agree to carry out joint testing, this option will not be given further consideration at this time. However, if discussions resume in the future and agreement is reached on a joint testing program, a new proposed action will be identified.

BLM will evaluate that new proposed action consistent with BLM's manual, H-1790-1,

to determine whether further environmental analysis is required. If BLM finds that the existing environmental assessment analyzes the impacts of the new proposed action, no further environmental analysis will be prepared. If BLM cannot make that finding, a tiered analysis, supplemental analysis, or a completely new analysis will be conducted as appropriate.

16.0 AFFECTED ENVIRONMENT:

16.1 Air Quality

Ward Valley is situated in the Mojave Desert Air Basin, which includes the hottest and driest portion of California. Arid weather conditions are present with low rainfall. The area has been designated as nonattainment for ozone and PM10.

Wind erosion of loose soils, vehicle travel on unpaved roads, and other sources of dust contribute marginally to particulate levels.

16.2 Noise

The northern boundary of the site is one-half mile from Interstate 40, a major highway. Consequently, the noise environment is dominated by traffic noise on the site. This ranges from 65 dBA at the northern boundary to 60 dBA at the southern boundary during the peak hour. During off-peak hours, when on-site noise is dominated by wind, noise levels are expected to range from 45 to 50 dBA.

16.3 Geology and Soils

The site is situated in a broad valley underlain by alluvial fan deposits derived from adjoining barren mountain ranges. Ward Valley trends slightly northeasterly and lies between the Piute and Sacramento Mountains. Coalescing alluvial fan deposits of Quaternary and Recent age extend eastward from the Piute Mountains and underlie the Ward Valley site. The surface of the alluvial fan deposits dips gently eastward across the site on slopes averaging two to three percent. Elevation of the ground surface at the site ranges from approximately 2,065 feet to 2,200 feet. Younger fan deposits occur at the surface with minimal soil development. The younger alluvial fan deposits consist of poorly sorted gravels derived from bedrock exposed in the adjoining Piute Mountains. The younger deposits form a veneer over older fan deposits of Pleistocene age. The Pleistocene deposits, comprised of moderately well-bedded gravel, sand, silt, and clay, are unconsolidated to moderately consolidated (Moyle, 1967). The mountain ranges adjoining Ward Valley reach a maximum altitude of approximately 3,500 feet.

A prominent northward-trending fault, the Dead Mountain Fault (Miller, 1943), occurs approximately 13 miles east of the Ward Valley site along the western edge of the Sacramento Mountains. The fault is partially buried under alluvial fan deposits,

indicating that displacement occurred prior to deposition of Quaternary alluvium.

16.4 Hydrology

Annual precipitation in Ward Valley averages approximately three to six inches per year. The adjoining mountains receive less than ten inches of precipitation annually. Runoff from the mountains contributes most of the recharge to the primary groundwater storage unit in the area, the valley alluvium. Recharge from precipitation in Ward Valley is believed to occur high on the alluvial fans adjacent to the bordering mountains, and could be as low as three percent of total annual precipitation. Annual free surface evaporation in Ward Valley may be as high as 98 inches per year and serves to limit infiltration of runoff.

There are no perennial or intermittent surface water bodies in the vicinity of the Ward Valley site. Ephemeral drainage channels that cross the site are narrow (six to 12 inches), shallow (two to six inches deep), and form a dispersed drainage network over the surface of the site. Along the east side of the site, these very shallow channels occur about every 50 to 75 feet. Slightly more incised channels are less frequent (estimated from maps and air photos to occur on the average about every 500 feet). For the most part, the nature of the shallow channels and surface materials on the proposed site indicates sheet flow during storms, rather than incised gully flow which is more typical of alluvial fans. The shallow channels that cross the proposed site originate in the Piute Mountains, about 2.5 miles west of the site, and discharge into Homer Wash, the axial drainage of Ward Valley, about 0.5 miles east of the site's eastern boundary.

Homer Wash, an ephemeral stream draining to the south, is about 100 feet lower in elevation than the proposed site at its closet point. At that point, Homer Wash is comprised of two well defined channels: one about 80 feet wide and four feet deep, and the other about 50 feet wide and three feet deep. At the point where runoff from the proposed site enters Homer Wash, the Homer Wash drainage area is about 55 square miles, and the portion of this area which is directly up gradient of the site is conservatively estimated as about 11 square miles in extent (Bechtel 1987). The most up gradient part of the local site drainage basin is intercepted by the raised grade for Interstate 40 and its associated drainage dikes and structures. The highway has the net effect of routing the runoff from about six square miles of drainage area into Homer Wash at a location north of the site. Just downstream of the drainage structures, storm runoff has incised gullies up to three feet deep. Within about 1,000 feet from the drainage structures, these well-incised gullies gradually dissipate into braided channels and then into shallow sheet-flow channels.

Groundwater basins in the site region generally comprise north-northeast trending, elongated, alluvial filled basins. Some of these basins are closed basins and ground water flows towards a dry lake whereas other basins discharge to an adjoining basin.

In general, the depth to ground water in these basins is greater than 500 feet below ground surface. Recharge in these basins principally occurs as infiltration of rainfall and/or underflow from an adjacent basin. Due to the low annual rainfall in the site region, recharge to these basins is relatively minor and consequently flow through the ground water system is minor.

Groundwater beneath the site occurs at a depth of 690-695 feet. The ground-water in the Ward Valley alluvium is rich in sodium bicarbonate (Bedinger et al., 1984). In the Danby Lake Basin to the south, the dissolved solids concentration is greater than 10,000 milligrams per liter. There has been little development of ground-water resources in Ward Valley. The nearest well in the vicinity of the Ward Valley site is at Camino, approximately 0.9 mile from the northern boundary of the site. This well was abandoned in 1968.

16.5 Vegetation

The vegetation in Ward Valley is Mojave Creosote Bush Scrub (Holland 1986), dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). These two species have a mean absolute cover at the site of 10.9% and 16.7% respectively. Other common associated plant species at the site include white ratany (*Krameria grayi*), pencil cholla (*Opuntia ramosissima*), goldenhead (*Acamptopappus sphaeracephalus*), and buckwheat (*Eriogonum fasciculatum*); scattered to occasional species include Mojave yucca (*Yucca schidigera*) and big galleta grass (*pleuraphis ridida*). Total plant cover ranges from 31.1 to 37.0%. A second major plant community, Mojave Wash Scrub dominates Homer Wash, a sandy channel east of the site. The aspect-dominant species in the wash is catclaw acacia (*Acacia greggii*). Other common arboreal species include smoke tree (*Psorothamnus spinosa*) and ironwood (*Olveya tesota*). Common understory species include cheesebush (*Hymenoclea salsola*), desert senna (*Senna armata*), ajamete (*Ascleplas subulata*), and paperbug bush (*Salazaria mexicana*). A full list of the species associated with the site and percent cover can be found in Table 4 and 5.

Three special plant species were sought in earlier site surveys: hedgehog cactus (*Echinocarcus engelmannii* var. *howei*), crucifixion thorn (*Castela emoryl*), and physalis (*Physalis lobata*). None was found within the three-mile zone to be surveyed in the current investigations (US Ecology 1989).

16.6 Wildlife

Species observed and known to occur at the site are typical of the Mojave Creosote Bush Scrub community. Common rodents include little pocket mouse (*Perognathus longimembris*), Merriam's kangaroo rat (*Dipodomys m. merriami*), antelope ground squirrel (*Amмосpermophilus leucurus*), and desert woodrat (*Neoloma lepida*). Larger mammals include black-tailed hare (*Lepus Californica*), desert kit fox (*Vulpes*

macrotis), badger (*Taxidea taxus*), and occasional coyotes (*Canis latrans*). Avifauna are most commonly represented by black-throated sparrow (*Amphispiza billnata*), LeConte's thrasher (*Toxostoma lecontei*), loggerhead shrike (*Lantus ludovicianus*), cactus wren (*Campylorhynchus brunneicapillus*), ash-throated flycatcher (*Myiarchus cinerascens*), and mourning dove (*Zenaidura macroura*); Homer Wash is host to Gambel's quail (*Colipecta gambelii*). Common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*) prairie falcon (*Falco mexicanus*) and American kestrel (*Falco sparverius*) are also occasionally present on or near the site. Common reptiles include the desert tortoise (*Gopherus agassizii*) side-blotched lizard (*Uta stansburiana*), western whiptail (*Cnemidophorus tigris*), leopard lizard (*Gambelia wislizenii*), desert iguana (*Dipsosaurus dorsalis*), zebra-tailed lizard (*Callisaurus draconoides*), desert horned lizard (*Phrynosoma platyrhinos*), gopher snake (*Pituophis melanoleucus*) sidewinder (*Crotalus cerastes*) and Mojave green rattlesnake (*C. scutulatus*) and Red Racer (*Masticophis flagellum piceus*); western patchnosed (*Salvadora hexalepis*), night snake (*Hypsiglena torquata*) and spotted leaf-nosed snake (*Phyllorhynchus decurcatus*) have been occasionally observed.

The desert tortoise is a state and federally-listed “threatened” species. The site is located within the Piute-Fenner-Chemehuevi valleys tortoise population and within both the Chemehuevi Critical Habitat Unit (USFWS 1994a) and the Chemehuevi Desert Wildlife Management Area inside the Eastern Mojave Recovery Unit (USFWS 1994b).

None of the vertebrate species known to use the site, even transiently, are state or federally-listed according to the California or Federal Endangered Species Acts. Five species of birds found in the area: prairie falcon, northern barrier, golden eagle, sharp-shinned hawk, and black-tailed gnatcatcher – are considered California Species of Concern. None are known to nest on the site and only the first three have been observed at the site, rarely. Black-tailed gnatcatcher is restricted to wash habitat and is found in Homer Wash. LeConte's thrasher was formerly Category 2, but is now a “watch” species following the dissolution of the Category 2 division by USDI.

16.7 Transportation and Access

The candidate site is located between approximately one-half and two miles south of Interstate 40, a four-lane freeway that is the main road connecting Barstow and Needles. Traffic on Interstate 40 between Barstow and Needles averages 6,000 to 12,000 vehicles per day, about half of which is trucks. The Camino exit from Interstate 40 leads to a graded access road and transmission line (MWD right-of-way) which runs the length of the Ward Valley. The driving distance along the dirt road to the northern edge of the site is one mile, and the distance to the southern edge of the site is another mile. A second unimproved dirt road along a telephone line that parallels the transmission line is slightly over one mile west of the MWD distribution line right-of-way access road. It leads to within 1,500 feet of the western side of the Ward Valley site.

16.8 Land Use

16.8.1 Existing On-site Land Use

According to the CDCA Plan, the site area and surrounding vicinity are designated as "Limited to Existing Routes of Travel" for motorized vehicles. Vehicles use the graded dirt access road that transects the eastern portion of the square mile site to access areas south of Interstate 40.

The predominant use of the site is as a utility corridor. The three-mile wide Energy Production and Utility Corridor E extends in a southwesterly direction from the California-Nevada border just west of State Highway 95 (northwest of Needles) to Interstate 10 west of its junction with State Highway 62. The corridor, which is labeled "E" on the CDCA Plan element map for Energy Production and Utility Corridors, contains at present two 230-kv power lines and one telephone line. It is proposed as a joint-use planning corridor. The CDCA-designated utility planning corridors are intended to accommodate the expansion of utility facilities constructed for the purpose of telecommunications and bulk transfers of electricity, gas, water, petroleum and other commodities. The MWD Camino Substation is located just south of Interstate 40 slightly less than a mile north of the site.

The site is not known to be used for recreational activities (such as rock-hounding, hiking and camping or off-road vehicle usage), educational field trips, or mineral exploration and mining.

The 1,000 acre proposed transfer site has been subject to characterization studies since 1987. A protest encampment in opposition to the proposed Ward Valley Low Level Radioactive Waste Disposal Facility is located within the bladed areas associated with site characterization studies.

16.8.2 Surrounding Land Use

Lands within the Ward Valley are used for various activities including livestock grazing, mineral exploration and mining, railroad transportation, and off-road vehicle recreational activities. There are state-owned lands to the east, north and southwest. The Mojave National Preserve is located about ten miles northwest of the site and on the opposite side of the Piute Mountains. Energy Production and Utility Corridors also lie to the south and southeast, and two pipelines are located approximately seven miles to the south.

Piute Mountains Wilderness Area begins just west of the telephone transmission line west of the site. Biglow Cholla Garden Wilderness Area, located east of the site, begins at the dirt road that leads southeast from the MWD Camino Substation.

Military objects, including ordnance, are known to exist in and around the 1000 acre site. Ward Valley and many other locations of the California Desert were used extensively for military training exercises in the 1940's and 1960's. It has been the practice of BLM for 30 years to notify the public of such hazards. BLM has established procedures with the military to identify and, when necessary, remove or destroy ordnance or other potentially hazardous military objects found on public lands.

A small, unexploded military device, presumed by military personnel to be a World War II vintage or newer M-1 anti-tank land mine, has been discovered at Ward Valley and was successfully detonated by ordnance personnel from Fort Irwin at BLM's request.

16.9 Visual Resources

The site area consists of large expanses of flat, sandy land. Vegetation is primarily scrub brush, clumps of grasses, and cactus, which grow low to the ground and generally do not affect visibility. Yucca plants are also located on the site. Mountain ranges are visible in the background. Man-made structures are present near the project area and include Interstate 40, the Camino Substation along the highway, and a transmission line. These elements represent a moderate contrast with the characteristic landscape. Since October 1995, they also include tents associated with the protest encampment.

16.10 Cultural Resources

Cultural resource investigations in the region, as a whole, have been conducted in conjunction with the development of BLM's California Desert Conservation Area Plan (CDCA) of 1980 and the 1991 Ward Valley Environmental Impact Report/ Statement (EIR/S). Both of these studies included extensive archival and records reviews, archaeological (including historical) field surveys, historical interviews with knowledgeable persons, and consultations with Native Americans whose ancestors traditionally occupied the study areas (BLM 1980, Cultural Systems Research, Inc. 1987, Hatheway and McKenna 1989).

Archaeological surveys in the region conducted by BLM staff in conjunction with studies for the CDCA Plan found that archaeological sites are concentrated in the northern end of the Old Woman Mountains and Piute Mountains, which are west of the area of potential effect. In 1987, a Class III intensive survey of the project area was conducted by the Archaeological Research Unit, University of California, Riverside (McCarthy, 1987). A designated Native American observer from the Colorado River Indian Tribe museum participated during the field investigation. Four isolated lithic artifacts were identified during the course of the field investigation: three were of crude chalcedony material and one was of obsidian. All four isolates were recorded and mapped, and the obsidian flake was collected for sourcing studies. No other

physical remains associated with the prehistoric or historic periods were identified.

During both the development of the 1980 CDCA Plan and the 1991 EIR/S, consultations were held with elder Native Americans from Southern California tribes. All consultations were oriented towards identifying places of significance within the California desert and specific study areas, including Ward Valley. According to some of the elders interviewed, Chemehuevi and Mojave people used Ward Valley for hunting and seasonal collection of plants for food and medicine. During visits to Ward Valley in 1987, Mojave elders identified several different species of plants as being culturally important and desert tortoises and redtail hawks as being extremely important in the religious belief system; Chemehuevi elders identified a minimum of 20 species of plants which are considered very important and several kinds of animals which are either sacred or important. While it should be noted that elders interviewed during the period 1977-1979 indicated that large campsites, villages, and associated burials might be located in Ward Valley, no archaeological sites or features were identified within the 1000 acre site, and none have been found in connection with drilling or other site work undertaken by US Ecology or DHS since 1987.

The Fort Mojave tribe has been opposed to the proposed low-level radioactive waste facility since 1987. During the scoping period for the Supplemental EIS in 1997, the Fort Mojave Tribe submitted comments identifying Ward Valley as a sacred spiritual place in their traditional lore. The tribe considers their culture as based upon sacred ties of tribal lore, oral tradition and mythology and that the area's importance centers around traditional teachings of medicine herbs, consideration of the tortoise as sacred and creation stories.

Subsequent meetings with representatives of the Chemehuevi and Fort Mojave Tribes in October of 1997 confirmed the spiritual importance of Ward Valley to the Native Americans, particularly the continuing practices in Ward Valley in relationship to Spirit Mountain, a major site in their creation story. According to tribal representatives tribal concerns were not addressed during the siting of other facilities in the region such as the MWD facilities and Interstate 40.

16.11 Socioeconomics

16.11.1 Demography

The site and surrounding area is unpopulated, with the exception of protestors encamped on public lands. The nearest permanent resident is about eight miles northwest near Goffs. Population centers in the vicinity of the site include the City of Needles about 25 road miles to the east with about 6,000 people; the community of Essex about 18 road miles to the west with about 100 people; and the community of Goffs about 11 road miles to the northwest with about 19 people.

Persons involved in activities at the site would lodge at motels in Needles or in the comfort RV to be located on-site during the study when staying onsite overnight.

16.11.2 Economics

Other than the proposed disposal facility development, the only known economic use of the site at present is as a utility transmission corridor.

Table 4

PERCENT PLANT COVER FOR PERENNIAL PLANT SPECIES,
WARD VALLEY CANDIDATE SITE/a/

	Transect	
	1	2
Larrea tridentata	5.5	6.5
Ambrosia dumosa	14.5	7.0
Krameria sp.	2.0	2.5
Yucca schidigera	0	0.5
Encelia virginensis	0	0.5
<u>TOTAL</u>	22.0	17.0

/a/Estimates of perennial plant cover were measured using the Parker Three-Step method.

SOURCE: Feldmeth, 1987

TABLE 5

CHECKLIST OF VASCULAR PLANTS FOR THE WARD VALLEY CANDIDATE SITE

Shrubs:

Ambrosia dumosa
Amphipappus fremontii
Asclepias subulata
Cassia armata
Dalea
Dalea spinosa
Encelia farinosa (just outside boundary)
Encelia virginensis
Eriogonum fasciculatum
Ferocactus acanthodes
Hilaria rigida
Hymenoclea salsola
Krameria sp.
Larrea tridentata
Lepidium fremontii
Opuntia ramosissima
Opuntia acanthocarpa
Opuntia basilaris
Opuntia stanleyi
Petalonyx thurberi ssp. thurberi
Porophyllum gracile
Salazaria mexicana
Thamnosma montana
Yucca schidigera

Total = 25 species

Herbaceous Perennials and Subshrubs:

Cucurbita palmata
Dalea mollis
Dyssodia cooperi
Eriogonum inflatum

Erioneuron pulchellum
Muhlenbergia porteri
Nicotiana trigonophylla (just outside western boundary)
Stephanomeria pauciflora

Annuals:

Amsinckia tessellata
Brassica sp.
Camissonia boothii
Caulanthus cooperi
Caulanthus lasiophyllus
Chaenactis sp.
Chamaesyce sp.
Chorizanthe brevicornu
Chorizanthe rigida
Cryptantha angustifolia
Cryptantha pterocarya
Eriogonum deflexum
Eriogonum trichopes
Eriophyllum lanosum
Erodium cicutarium
Gilia sp.
Langloisia sp.
Lepidium lasiocarpum
Lesquerella palmeri
Lotus salsuginosus
Lupinus sp.
Lupinus concinnus ssp. orcuttii
Monoptilon bellioides
Nama demissum
Pectocarya sp.
Phacelia crenulata
Phacelia distans

Plantago fastigiata
Rafinesquia neomexicana
Schismus barbatus
Stillingia spinulosa

Total = 31 species

Total = 8 species

SOURCE: Feldmeth, 1987

17.0 ENVIRONMENTAL CONSEQUENCES:

This sections describes in detail the environmental effects of DOI/BLM testing, State DHS testing, separate DOI/BLM and State DHS testing, and No Action.

17.1 Effects on Air Quality

17.1.1 DOI/BLM Testing

Emissions from drilling equipment and vehicles would cause a slight increase in pollutants at the project site, including carbon monoxide, ozone, suluer dioxide, total suspended particulate, PM10, and lead. In addition, dust would be generated by construction activities and operations, including approximately 500 total vehicle miles travelled over unpaved roads at the site over an eight week period. Overall, the expected PM10 emissions are within de minimus levels included in section 93.153(b)(1) of the Final Rule, Clean Air Act, Section 176(c), which allows PM10 emissions up to 100 tons per year.

17.1.2 State DHS Testing

Emissions from drilling equipment and vehicles would cause a slight increase in pollutants at the project site, including carbon monoxide, ozone, sulfur dioxide, total suspended particulate, PM10, and lead. Clearing of access routes and drill pads would accelerate soil erosion and increase airborne dust. Dust would also be generated by operations, including approximately 1000 vehicle miles travelled on unpaved road at the site over a six week period. Overall, emissions are within de minimus levels.

17.1.3 Separate DOI/BLM and State DHS Testing

Emissions would be within de minimus levels. Impacts would extend over the 8-14 week period of operations.

17.2 Effects on Noise Levels

17.2.1 DOI/BLM Testing

Noise from drilling operations are estimated to be 90 dBA at a distance of 50 feet from the drilling. Noise would also result from vehicle use associated with the drilling and support activities. The resultant noise levels would decrease to about background levels

within a mile from the site, drilling crews and support personnel would be exposed to higher noise levels; the public would generally not be exposed to higher levels because of the extremely limited public use in the area and the fact that BLM will close the 1000 acre site during the drilling. Furthermore, noise from nearby Interstate 40 (about a mile to the north) can be heard at the site at dBA levels up to 65 dBA.

Impacts from noise would be limited to the hours of operation. The DOI/BLM proposal is for one drill crew generally operating during daylight hours. Effects would occur over an approximately 8 week period.

17.2.2 State DHS Testing

The State's plan involves 24-hour drilling with two crews working concurrently. This would increase the noise generated at the project site during operations but would shorten the total length of time the impacts would occur from approximately 8 weeks to 6 weeks.

17.2.3 Separate DOI/BLM and State DHS Testing

Noise would be generated over an 14 week period. No additional cumulative impacts are expected.

17.3 Effects on Soils and Geology

17.3.1 DOI/BLM Testing

Approximately one-half acre of surface would be affected by DOI/BLM testing operations, including previously disturbed areas within the 1000 acre site. Existing access routes would be used, including an overgrown and unmaintained route providing access to DOI drill sites 3, 4 and 5 and the two shallow trenches. Soils would be disturbed at bore hole locations and trenches but additional clearing along access routes or bore sites is not proposed. The overall effect on soils of testing would be minor and would be fully mitigated by reclamation after the drilling is completed.

No economic minerals have been extracted from the site and the 1000 acre site is currently withdrawn from the mining laws. The proposed action would have no effect on geologic values.

17.3.2 State DHS Testing

Approximately one acre would be disturbed as a result of clearing vegetation for drill pads and access routes. New access routes would be approximately 15 feet wide and "flush cut" of all vegetation. All of the eight bore holes proposed by DHS are outside the existing clearings. The State proposes to place all drill pads within 100 feet of the

existing disturbed areas to minimize impacts. Total surface area involved for drill pads and support areas is not more than 2,500 square feet per bore hole location (a total area of 20,000 square feet) and "flush cut" of all vegetation.

As a result of the cutting of vegetation in drill pads, support areas, and access routes, soil would be exposed to wind and water erosion. It is likely winter storms would occur during the drilling period, increasing the risk of accelerated erosion on approximately one acre. Reclamation would help stabilize the soils and prevent further erosion following completion of the drilling.

17.3.3 Separate DOI/BLM and State DHS Testing

Slightly more surface area would be disturbed if both DOI/BLM and the State were to drill.

17.4 Effects on Hydrology

17.4.1 DOI/BLM Testing

All stream channels on or adjacent to the Ward Valley site are ephemeral in nature. The normally dry channels contain surface water flow only as a result of infrequent rain. No impact to surface water resources is foreseen. Borings that would be backfilled with cuttings or native soil will prevent contamination of ground-water resources.

17.4.2 State DHS Testing

No impact to surface water resources is foreseen. Borings that would be backfilled with cuttings or native soil will prevent contamination of ground-water resources.

17.4.3 Separate DOI/BLM and State DHS Testing

No additional cumulative impacts anticipated.

17.5 Effects on Vegetation

17.5.1 DOI/BLM Testing

Most of the drilling and support activities would occur on existing clearings. Except in the two shallow trenches and 150 foot bore holes located in the northeasterly portion of the site near the MWD road, no vegetation would be disturbed. The remaining area is partially in a natural wash and rill along the site of an overgrown route. Vehicles would be driven over the overgrown portions of the existing access route and on the drill/trench locations but vegetation would not be cleared or cut to improve existing

access.

17.5.2 State DHS testing

As a result of the flush-cutting and removal of vegetation in drill pads, support areas, and access routes, vegetation would be adversely affected on approximately one acre. The predominant shrub species - creosote bush and white bursage - would generally not resprout effectively after cutting. Exotic species would replace native shrubs for the foreseeable future in the disturbed locations.

17.5.3 Separate DOI/BLM and State DHS Testing

Slightly more vegetation would be disturbed if both DOI/BLM and the State were to drill.

17.6 Effects on Wildlife

17.6.1 DOI/BLM Testing

Potential impacts to the desert tortoise and tortoise critical habitat are minor and are within the scope of the U.S. Fish and Wildlife Service (FWS) biological opinion, #1-8-97-F-17, which covers small projects in the California Desert. Less than one acre of tortoise critical habitat would be subject to incremental surface disturbance. Birds may continue to forage over the site, but would not nest onsite during drilling. These species will be unaffected by the temporary loss of vegetation and scrub habitat. Other wildlife will experience a temporary loss of cover and forage. Increased human disturbance would occur to small wildlife and their territories or home ranges. Rodents, lizards, and raptor foraging areas would be disturbed. These impacts would be temporary and minor.

17.6.2 State DHS testing

Potential impacts to the desert tortoise and tortoise critical habitat are minor and are within the scope of the U.S. Fish and Wildlife Service (FWS) biological opinion, #1-8-97-F-17, which covers small projects in the California Desert. Less than one acre of tortoise critical habitat would be subject to incremental surface disturbance. Birds may continue to forage over the site, but would not nest onsite during drilling. These species will be unaffected by the temporary loss of vegetation and scrub habitat. Other wildlife will experience a temporary loss of cover and forage. Increased human disturbance would occur to small wildlife and their territories or home ranges. Rodents, lizards, and raptor foraging areas would be disturbed. Proposed road watering could encourage tortoises and other species to the access routes. Overall, the impacts wildlife would be temporary and minor.

17.6.3 Separate DOI/BLM and State DHS Testing

The longer period of drilling would extend the exposure of wildlife species to noise, dust, and human interaction and further reduce habitat quality during the drilling. Slightly more habitat would be disturbed if both DOI/BLM and the State were to drill.

17.7 Effects on Visual Resources

17.7.1 DOI/BLM testing

Permanent impacts to visual resources will be negligible. Most traces of the study including drill equipment, vehicles, and support facilities will be removed upon project completion. Permanent facilities for monitoring will be of low relief and should not be noticeable. No new surface disturbances will be evident. The site would be visible from Interstate 40.

17.7.2 State DHS Testing

The site can be viewed from Interstate 40. Night lighting of the drilling operations would be clearly visible. Adverse impacts to visual resources would result from new disturbances caused by construction of drill pads, support areas, and access routes. Changes in vegetation following project completion and reclamation described in the vegetation section of this EA will result in a noticeable visual contrast on approximately one acre. Drill equipment, vehicles, and support facilities will be removed. The overall visual impact is considered minor because the 1000 acre site already has been disturbed by previous activities. Permanent facilities for monitoring will be of low relief and should not be noticeable.

17.7.3 Separate DOI/BLM Testing

Impacts would occur over a longer period of time if sequential drilling were to occur.

17.8 Effects on Cultural Resources and Native American Values

17.8.1 DOI/BLM Testing

No adverse effects to physical remains associated with either historic or prehistoric periods would occur. In 1987, an archaeological survey was conducted throughout the proposed transfer site. The survey identified four isolated stone artifacts. The isolated artifacts were recorded, and the records filed at the Archaeological Research Unit, University of California, Riverside and at the California State Office of Historic Preservation in Sacramento. The artifacts, located in isolation from each other, are too few in number to meet standards for an archaeological site, and none of the four artifacts, individually or in combination, meet criteria for eligibility to the National

Register of Historic Places, as set forth in implementing regulations under the National Historic Preservation Act. The proposed project will have no effect on historic properties, that is, cultural resources which are eligible to the National Register.

The area of potential effect was evaluated as a traditional cultural property, based on information provided through consultations with elders of Native American tribes which were conducted from 1977 to 1979 and in 1987. Information provided by elders at those times indicates that the area of potential effect might provide foods, medicines, and materials which are culturally important and might be inhabited by desert tortoises and other animals which are considered sacred, but the information does not indicate that the area of potential effect is important in maintaining the continuing cultural identity of the community or communities. Based on information gathered during consultations, the area of potential effect does not meet the criteria of a traditional cultural property, and does not meet criteria of eligibility to the National Register.

Based on discussions with the Fort Mojave and Chemehuevi Tribes in October of 1997, the proposed drilling activity will interfere with traditional or religious activities in Ward Valley during the period of time that drilling is proposed to occur. The Chemehuevi and Fort Mojave representatives indicated that they were opposed to further desecration of the natural resources in Ward Valley due to these adverse impacts.

The 1000 acre site would also be closed to unauthorized uses during drilling, and the closure could prevent Native Americans from visiting the site except as authorized by BLM. Since the closure will coincide with the actual drilling period and the closure would be lifted when the drilling is completed, the effects of the closure would be temporary and minor.

BLM considers the results of the testing critical to evaluating the potential effects of the proposed transfer and LLRW facility on Native Americans, and has initiated consultations with the five affected tribes to assure Native American values are respected. There will be no effect from the drilling on reservation land, which are more than 20 miles from the project location.

17.8.2 State DHS Testing

Native Americans tribal officials and individual tribal members from the affected tribes have said that the State's testing would conflict with traditional and religious use by Native Americans. Native Americans have said that the State DHS has not consulted with them or made the State's drilling protocol available.

17.8.3 Separate DOI/BLM and State DHS Testing

No additional cumulative impacts anticipated.

17.9 Impacts of No Action

If no drilling is undertaken, the area would continue to be subject to use by US Ecology for monitoring purposes and the MWD for maintenance of their powerline, consistent with the existing right-of-way grant, as well as permitted protest activities. Minor impacts would continue to occur to soils, vegetation, and wildlife. These have been fully considered in existing environmental documents prepared for the existing authorizations.

18.0 MITIGATION MEASURES:

The following mitigation measures would be applied to all alternatives to further reduce impacts.

18.1 Air Quality

Measures should be undertaken to minimize dust levels in accordance with the San Bernardino County approved dust abatement plan as it applies to the activities undertaken in the proposed Ward Valley testing program.

Specific limitations to mitigate air quality impacts should include the following: limit the number of vehicles on unimproved roads by having workers assemble near the freeway off-ramp to be shuttled to the job site.

Speeds should be limited to 15 mph on the MWD right-of-way access road and 10 mph onsite.

Work should be shut down if wind speeds exceed 30 mph

Additional mitigation measures should be implemented if PM10 emissions exceed the Mohave Desert Air Quality Management District (MDAQMD) standards or California Health and Safety Code Section 41700 and 41701.

18.2 Noise

Hearing protection equipment would be worn by workers within 50 feet in any direction of operating drill rigs.

A buffer zone of 75 feet would be marked around drilling operations. Anyone without a work-related purpose will be excluded from the buffer zone.

18.3 Soils

No vehicle use would be permitted during periods of rainfall. This will further help to

minimize soil compaction.

18.4 Vegetation

FWS approved biologist will identify vegetation that must be preserved, including important forage items for desert tortoises, prior to constructing or improving the drilling pads, support areas, and access routes.

Specific revegetation measures would be approved by BLM prior to implementation.

18.5 Wildlife

All terms and conditions within the biological opinion (attached) would be mandatory.

18.6 Determination of Presence of Military Ordnance

BLM is working with the military to determine appropriate actions necessary to ensure public safety from potential unexploded military ordnance at Ward Valley. Until that determination is made, BLM will continue to advise permitted users and the public of potential hazards of unexploded military ordnance.

19.0 RESIDUAL IMPACTS:

No adverse residual impacts are anticipated as a result of implementing the mitigation measures above.

If the vegetation clearing proposed by the State for drill sites, support areas, and access routes is not permitted, the impacts associated with the proposed clearing would be reduced to a level comparable to the DOI/BLM alternative.

20.0 CUMULATIVE IMPACTS

Implementation of any of the alternatives would have a slight adverse cumulative impact on soils, vegetation, wildlife, air and visual quality, and Native American values. A maximum of 2 acres of disturbance from the testing alternatives would be added to the approximately 5 acres of the 1000 acre site that have been bladed clear of vegetation and have been used for site characterization and monitoring purposes by US Ecology since 1987. The surrounding area, further, has been impacted by major land development including an electrical power substation, Interstate 40, an airstrip, and a 230-kv powerline and access road. In addition, the Fort Mojave Indian Tribe, on behalf of the Colorado River Native Nations Alliance and Save Ward Valley, maintains a protest encampment in opposition to the proposed Ward Valley Low Level Radioactive Waste Disposal Facility located within the bladed areas associated with site characterization studies. The encampment, with up to 25 protest campers and 25 day

users, utilizes less than two acres. Larger protest activities are occasionally held on the nearby airstrip approximately one mile to the east of the site.

21.0 CONSULTATIONS:

Consultation with FWS pursuant to Section 7 of the Endangered Species Act was completed initiated for the State DHS proposal on September 23, 1997 and for the DOI/BLM as well as Both DOI/BLM and State DHS testing on October 1, 1997.

On October 9, 1997, the Fort Mojave, Chemehuevi, Colorado River, Quechan, and Cocopah Indian Tribes were notified of the DHS and DOI proposals to conduct rainfall infiltration/tritium testing in Ward Valley and invited to meet with BLM as part of the nation-to-nation consultation process. On October 14, 1997, the Needles Field Manager met with tribal council members of the Fort Mojave and the Chemehuevi Tribes to discuss their issues and concerns. Copies of the DHS proposal were provided to the Fort Mojave and Chemehuevi representatives at that time. Meetings have not yet been held with the Colorado River, Quechan, and Cocopah Tribes, however copies of the DHS proposal were mailed to them on October 27, 1997.

22.0 REFERENCES:

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